

REMARKS

In the last Office Action, newly submitted figures 26-27 were objected to under 37 C.F.R. 1.83(a) as failing to show either the groove or the optical different refractive indexes as described in the specification. The title of the invention was objected to as not being descriptive. Claims 39, 40, 43, 44, 45, 47, 48, 51, and 52 were objected to under various grounds. Claims 36-39, 45-47, 45-47, 49-51, 54-56, 62-64, and 66-68 were rejected under 35 U.S.C §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being unpatentable over Guerra '348 (USPN 6,115,348) or Guerra '507 (USPN 6,249,507) in view of JP 10-112075 ("Japan '075") and Bricot (USPN 4,344,164). Claims 40 and 53 were rejected under 35 U.S.C. §103(a) as being unpatentable over the art cited above for claim 36 and further in view of Guerra '940 (USPN 5,910,940) and Lemelson (USPN 4,084,198) or Morisawa (USPN 5,881,214). Claims 41-43 and 58-60 were rejected under 35 U.S.C. §103(a) as being unpatentable over Guerra '348 or '507 in view of EP 0552887 ("EP '887"), Japan '075 and Bricot. Claims 44 and 57 were rejected under 35 U.S.C. §103(a) as being unpatentable over the art cited for claim 41 and further in view of Guerra '940 and Morisawa. Claims 48, 52, 61 and 65 were rejected under 35 U.S.C. §103(a)

as being unpatentable over the art cited above for claims 45 and 49 and further in view of Guerra '940 and Morisawa.

Additional art was cited of interest.

In accordance with the present response, independent claims 36, 41, 45 and 49 have been amended to further patentably distinguish from the prior art of record.

Independent claim 45 has been further amended to overcome claim objection b) set forth on page 3 of the Office Action. Claims 39, 43, 47, and 51, 53-55 have been amended to conform to the amendments to independent claims 36, 41, 45 and 49, respectively. The previous title of the invention has been changed to "NEAR-FIELD INFORMATION REPRODUCING APPARATUS AND NEAR-FIELD INFORMATION REPRODUCING METHOD" to more clearly reflect the invention to which the claims are directed. The previously submitted abstract has been amended to more clearly reflect the invention of the amended claims.

Applicants request reconsideration of their application in light of the foregoing amendments and the following discussion.

Drawing Objection

Newly submitted Figs. 26-27 were objected to under 37 C.F.R. 1.83(a) as failing to show either the groove or the optically different refractive indexes as described in the specification. According to the Examiner, these features are

not clearly indicated by reference numerals "1500" and "1600" in Figs. 26 and 27, respectively. Applicants respectfully disagree.

Figs. 26 and 27 were submitted in the supplemental response filed January 18, 2007 in order to comply with 37 C.F.R. §1.83(a) which requires that the drawings must show every feature of the invention recited in the claims. For example, claim 58 recites that each of the linear marks comprises a groove having a linear edge formed in the medium. An example of the groove recited in claim 58 is clearly shown in Fig. 26 as denoted by reference numeral 1500. Likewise, claim 59 requires that each of the linear mark comprises a plurality of substances having different optical properties. An example of the substances having different optical properties recited in claim 59 is clearly shown in Fig. 27 as denoted by reference numeral 1600. Pages 42 and 49 of the specification, as amended in the supplemental response, provide clear descriptions for Figs. 26 and 27, including the groove denoted by reference numeral 1500 and the substances having different optical properties denoted by reference numeral 1600.

Accordingly, applicants respectfully submit that Figs. 26 and 27 are in full compliance with 37 C.F.R. §1.83(a) and request that the objection thereof be withdrawn.

Claim Objections

Claims 39, 40, 43, 44, 45, 47, 48, 51-56, 57-60, 61-64 and 65-68 were objected to under various grounds. Applicants respectfully traverse these objections.

Applicants will address the claim objections with reference to the Examiner's outline on pages 3-4 of the Office Action.

a) Dependent Claims 39, 40, 43, 44, 47, 48, 51, 52

Claims 40, 44, 48 and 52 have been canceled without prejudice or admission, thereby rendering the objection to these claims moot.

Claims 39, 43, 47 and 51 have been amended to conform to the amendments to independent claims 36, 41, 45 and 49, respectively. The Examiner contends that these claims fail to further limit the base claim from which they depend. According to the Examiner, "defining what the mark represents does not limit the apparatus." Applicants respectfully disagree with the Examiner's contention.

Each of dependent claims 39, 43, 47 and 51 is directed to the specific structure of the linear mark recited in the corresponding base claim. In this regard, each of claims 39, 43, 47 and 51 includes the additional limitation that the plurality of linear marks comprise a plurality of

linear data and tracking marks disposed in overlapping relation to one another.

Thus, dependent claims 39, 43, 47 and 51 further define the structure of the linear marks recited in base claims 36, 41, 45 and 49 as constituting linear data and tracking marks disposed in overlapping relation to one another. As recited in each of the base claims, the linear marks form part of the medium which in turn is a structural component of the information reproducing apparatus of base claims 39, 43 and 47 and a positively recited component of the "providing" step in the information reproducing method of base claim 49. Stated otherwise, claims 39, 43, 47 and 51 further define the structure of the medium recited in base claims 36, 41, 45 and 49 and, therefore, further define or limit the overall structure of the information reproducing apparatus of base claims 36, 42, 45 and the overall procedure of the information reproducing method of base claim 49.

b) Dependent Claim 45

Claim 45 has been amended to overcome the objection by separately reciting the functions of the light generating means and the control means.

c) Dependent Claims 53, 57, 61, 65

Each of claims 53, 57, 61 and 65 includes the additional limitation that each of the linear marks, which

forms part of the medium recited in corresponding base claims 36, 41, 45 and 49, comprises a projection having a linear edge. Thus, claims 53, 57, 61 and 65 further define the structure of the medium and, therefore, further define or limit the overall structure of the information reproducing apparatus of base claims 36, 42, 45 and the overall procedure of the information reproducing method of base claim 49, as set forth above for the objection in part a).

d) Dependent Claims 54, 58, 62 and 66

Each of claims 54, 58, 62 and 66 includes the additional limitation that each of the linear marks, which forms part of the medium recited in corresponding base claims 36, 41, 45 and 49, comprises a groove having a linear edge formed in the medium. Thus, claims 54, 58, 62 and 66 further define the structure of the medium and, therefore, further define or limit the overall structure of the information reproducing apparatus of base claims 36, 42, 45 and the overall procedure of the information reproducing method of base claim 49, as set forth above for the objection in part a).

e) Dependent Claims 55, 56, 59, 60, 63, 64, 67, 68

Each of claims 55, 59, 63 and 67 includes the additional limitation that each of the linear marks, which forms part of the medium recited in corresponding base claims

36, 41, 45 and 49, comprises a plurality of substances having a linear interface and formed in a planar surface of the medium, the substances having different optical properties. Claims 56, 60, 64 and 68 depend on claims 55, 59, 63 and 67, respectively, and include the additional limitation that the different optical properties are different refractive indices. Thus claims 55, 56, 59, 60, 63, 64, 67 and 68 further define the structure of the medium and, therefore, further define or limit the overall structure of the information reproducing apparatus of base claims 36, 42, 45 and the overall procedure of the information reproducing method of base claim 49, as set forth above for the objection in part a).

f) Dependent Claims 51 and 52

The Examiner contends that independent claim 49 does not provide support for "the at least one linear mark" recited in dependent claims 51 and 52. Applicants respectfully disagree.

As amended, claims 51 and 52 do not recite "the at least one linear mark", thereby rendering the objection to these claims moot.

Nevertheless, applicants note that independent claim 49 does provide support for "the at least one linear mark." In this regard, independent claim 49 recites the steps of providing a medium having a plurality of information unit

fields and a plurality of linear marks, and irradiating "at least one of the linear marks".

In view of the foregoing, applicants respectfully submit that the objections to claims 39, 40, 43, 44, 45, 47, 48, 51-56, 57-60, 61-64 and 65-68 have been overcome and should be withdrawn.

Brief Summary of the Invention

The present invention relates to a near-field information reproducing apparatus and to a near-field information reproducing method.

Conventional information reproducing apparatuses which reproduce information from a medium utilizing near-field light are known. However, as described in the specification (pgs. 1-3), the conventional information reproducing apparatuses have not been able to provide high-density reproduction of information.

The present invention overcomes drawbacks of the conventional art. Figs. 1 and 7 show an embodiment of an information reproducing apparatus according to the present invention embodied in the claims. The information reproducing apparatus has a light source 102 for generating linearly polarized light, and a medium having an information unit field and a plurality of linear marks 227, 228 and 229 disposed in the information unit field in overlapping relation to one

another. An optical head 104 is disposed between the light source 102 and the medium 101 and has a fine aperture 103. The light source 102 includes a polarized light control portion for controlling the linearly polarized light generated by the light source 102 to pass through the fine aperture 103 of the optical head 104 to generate near-field light having a preselected polarization direction and to irradiate the linear marks disposed in the information unit field of the medium with the near-field light so that the preselected polarization direction of the near-field light is orthogonal to a longitudinal axis of each of the linear marks. A detector 105 detects light scattered by the linear marks irradiated with the near-field light.

By providing a medium having an information unit field and a plurality of linear marks disposed in the information unit field in overlapping relation to one another, the recording density of the information reproducing apparatus is enhanced. Furthermore, by providing a light source that includes a polarized light control portion that irradiates the linear marks of the medium with the near-field light so that the preselected polarization direction of the near-field light is orthogonal to a longitudinal axis of each of the linear marks, light scattered by the linear mark of the medium has an intensity which is sufficiently high to permit high-density reproduction of information. Thus, the present invention

provides a high-density near-field information reproducing apparatus and corresponding near-field information reproducing method.

Traversal of Prior Art Rejections

Claims 36-39, 45-47, 49-51, 54-56, 62-64, and 66-68 were rejected under 35 U.S.C §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being unpatentable over Guerra '348 or Guerra '507 in view of Japan '075 and Bricot. Applicants respectfully traverse these rejections.

Amended independent claims 36 and 45 are directed to an information reproducing apparatus. Claim 36 recites a medium having an information unit field and a plurality of linear marks disposed in the information unit field in overlapping relation to one another. Likewise, claim 45 recites a medium having a plurality of information unit fields and a plurality of linear marks disposed in each of the information unit fields in overlapping relation to one another and extending in different directions from one another.

Amended independent claim 49 is directed to an information reproducing method and recites the step of providing a medium having a plurality of information unit fields and a plurality of linear marks disposed in each of the

unit fields in overlapping relation to one another and extending in different directions from one another.

Thus each of amended claims 36, 45 and 49 requires a medium having a plurality of linear marks disposed in an information unit field in overlapping relation to one another. No corresponding feature is disclosed or suggested by Guerra '348, Guerra '507, Japan '075 and Bricot, either alone or in combination.

For example, Guerra '348 and '507 disclose a near-field system including a medium with plural marks. However, Guerra '348 and '507 do not teach a plurality of liner marks disposed in overlapping relation to one another, as recited in amended independent claims 36, 45 and 49. Japan '075 and Bricot also fail to teach such overlapping relation between linear marks disposed in an information unit field of a medium and, therefore, do not cure the deficiencies of Guerra '348 or '507.

Each of independent claims 36, 45 and 49 further require the irradiation of the overlapping linear marks with near-field light so that a polarization direction of the near-field light is orthogonal to a longitudinal axis of each of the linear marks. No corresponding feature is disclosed or suggested by the prior art of record.

Claims 37-39, 54-56 and 46-47, 62-64 and 50-51, 66-68 depend on and contain all of the limitations of amended

independent claims 36, 45 and 49, respectively, and, therefore, distinguish from the references at least in the same manner as claims 36, 45 and 49.

Moreover, there are separate grounds for patentability of dependent claims 39, 47, 51, 54-56, 62-64 and 66-68 which are directed to the specific structure of the overlapping linear marks. No corresponding specific structures are disclosed or suggested by the prior art of record.

In view of the foregoing, applicants respectfully request that the rejections of claims 36-39, 45-47, 49-51, 54-56, 62-64, and 66-68 under 35 U.S.C §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being unpatentable over Guerra '348 or Guerra '507 in view of Japan '075 and Bricot be withdrawn.

Claims 41-43, 53, 57-61 and 65 were rejected under 35 U.S.C. §103(a) as being unpatentable over various combinations of the references to Guerra '348, '507 and '940, Lemelson, Morisawa, EP '887, Japan '075 and Bricot.

Applicants respectfully traverse these rejections.

Amended independent claim 41 is directed to an information reproducing apparatus and recites a medium having an information unit field and a plurality of linear marks disposed in the information unit field and extending in different directions from one another and disposed in

overlapping relation to one another. No corresponding structure is disclosed or suggested by Guerra '348 and '507, Japan '075 and Bricot as set forth above for amended independent claims 36, 45 and 49.

EP '887, Lemelson and Morisawa teach linear marks in connection with a recording medium. However, none of these references teach a medium having a plurality of linear marks disposed in the information unit field and extending in different directions from one another and disposed in overlapping relation to one another, as recited in amended independent claim 41.

Independent claim 41 further requires the irradiation of the overlapping linear marks with near-field light so that a polarization direction of the near-field light is orthogonal to a longitudinal axis of each of the linear marks. No corresponding feature is disclosed or suggested by the prior art of record. 41-43, 53, 57-61 and 65

Claims 53 and 57-60 and 61 and 65 depend on and contain all of the limitations of amended independent claims 36, 41, 45 and 49, respectively, and, therefore, distinguish from the cited references at least in the same manner as claims 36, 41, 45 and 49.

Moreover, there are separate grounds for patentability of dependent claims 53, 57-61 and 65 which are directed to the specific structure of the

overlapping linear marks. No corresponding specific structures are disclosed or suggested by the prior art of record.

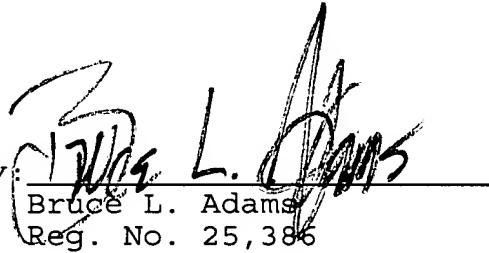
In view of the foregoing, applicants respectfully request that the rejections of claims 41-43, 53, 57-61 and 65 were rejected under 35 U.S.C. §103(a) as being unpatentable over various combinations of the references to Guerra '348, '507 and '940, Lemelson, Morisawa, EP '887, Japan '075 and Bricot be withdrawn.

In view of the foregoing amendments and discussion, the application is believed to be in allowable form. Accordingly, favorable reconsideration and allowance of the claims are most respectfully requested.

Respectfully submitted,

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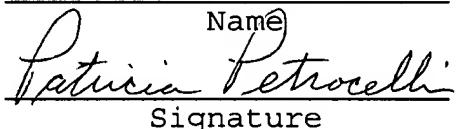
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